Memorandum

To: *Diane Salkie, EPA Region 2*
Elizabeth Franklin, USACE

From: *Troy Gallagher, CDM Smith*

Date: *November 26, 2019*

Subject: *Summary of Oversight of Chemical Water Column Monitoring*
August 20–22, 2019
Lower Passaic River Restoration Project

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) traveled to the Lower Passaic River Study Area (LPRSA) on Tuesday, August 20 through Thursday, August 22, 2019 and provided field technical oversight for the first round of surface water sampling associated with the Chemical Water Column Monitoring (CWCM) program.

Water sampling was conducted at 5 different locations along the Lower Passaic River at the following river mile (RM) locations: RM 8.4, RM 10.2, RM 12.0, RM 13.5, and RM 15.8. Only one sample was collected from RM 15.8 from a mid-depth of the river. For the remaining four locations, two samples were collected from each location, one from the top of the RM location approximately 3 feet below the surface, and the second from approximately 2 feet above the river bottom; samples were collected during both flood and ebb tides from each river mile station. Samples were collected using a peristaltic pump to pump water directly into the sample containers. Water quality parameters recorded from the YSIs that are deployed at each location were recorded at the time of sampling. Field activities were conducted by Ocean Surveys, Inc. (OSI) and AECOM on behalf of the Cooperating Parties Group (CPG). Anchor QEA provided field support on behalf of the CPG. No split samples were collected by CDM Smith during this CWCM event due to the CDM Smith CWCM Oversight Quality Assurance Project Plan (QAPP) still awaiting approval.

The fixed point monitoring locations are presented in Figure 1 (note this figure is from the CPG's CWCM QAPP). Oversight was conducted in accordance with CDM Smith's Final QAPP for PWCM, dated August 13, 2019 (split samples were not accepted during this event). Photographs of field activities are presented in Attachment 1. A copy of the field logbook notes is provided in Attachment 2.

Summary of Tuesday, August 20, 2019 Field Activities

Personnel in Attendance

Troy Gallagher – CDM Smith
Alexandra Allen – OSI
Kristen Durocher – AECOM
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM
Chris Yates – Anchor QEA

All personnel met at the 1 Madison Road boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with equipment for sampling. Anchor QEA and CDM Smith were aboard a separate boat for observation and oversight.

All personnel mobilized to RM 8.4 to begin collecting the samples during the flood tide. Upon arrival to RM 8.4, YSI water quality parameters were recorded by AECOM personnel, and sample containers were labeled to prepare for collection. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 8.4 location. After all sample containers were filled, the YSI and tubing were raised to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. All samples that were collected were placed in coolers, and then placed on the boat with Anchor QEA and CDM Smith.

All personnel mobilized to RM 10.2 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 10.2 location. After all sample containers were filled, the YSI and tubing were raised to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. All samples that were collected were placed in coolers. Both crews returned back to the 1 Madison Street dock to hand off full coolers with samples to personnel in the support trailer.

The crew waited on shore until the tide in the river changed so the collection of the ebb tide samples could begin. All personnel mobilized to RM 10.2 to begin collecting the samples during the ebb tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. Samples were collected from the bottom location at RM 10.2. After all sample containers were filled, the YSI and tubing were raised to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. All samples that were collected were placed in coolers, and placed on Anchor QEA's boat.

All personnel mobilized to RM 8.4 to begin collecting the samples during the ebb tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. Samples were collected from the bottom location at RM 8.4. After all sample containers were filled, the

YSI and tubing were raised to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. All samples were placed in coolers, and both crews returned back to the dock at 1 Madison Street.

Summary of Wednesday, August 21, 2019 Field Activities

Personnel in Attendance

Troy Gallagher – CDM Smith
Alexandra Allen – OSI
Kristen Durocher – AECOM
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM
Chris Yates – Anchor QEA

All personnel met at the 1 Madison Road boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with equipment for sampling. Anchor QEA and CDM Smith rode in a support boat for observation and oversight. All personnel mobilized downstream to RM 12.0.

AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. Samples were collected from the bottom location at RM 12.0 for the flood tide. After all sample containers were filled, the YSI and tubing were raised to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A field duplicate was collected with the sample from the surface location at RM 12.0. All samples that were collected were placed in coolers, and placed on Anchor QEA's boat.

Both crews mobilized towards RM 13.5 for sample collection during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. Samples were collected from the bottom location at RM 13.5. After all sample containers were filled, the YSI and tubing were raised to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. All samples that were collected were placed in coolers, and both crews returned back to the dock at 1 Madison Street to give sample coolers to personnel onshore.

After waiting for the beginning of the ebb tide, both crews mobilized to RM 15.8 to collect the mid-depth sample. Water quality parameters were collected, and the sample containers were filled and placed in coolers. Both crews departed RM 15.8 and returned back to the 1 Madison Street dock to replace the battery for electronics on OSI's boat. The crews mobilized to RM 13.5 to begin preparations for sampling during the ebb tide, however the threat of lightning forced both crews off the water to wait for the weather to clear. OSI personnel officially terminated the sampling event for the day due to inclement weather, with sampling to be finished the following day.

Summary of Thursday, August 22, 2019 Field Activities

Personnel in Attendance

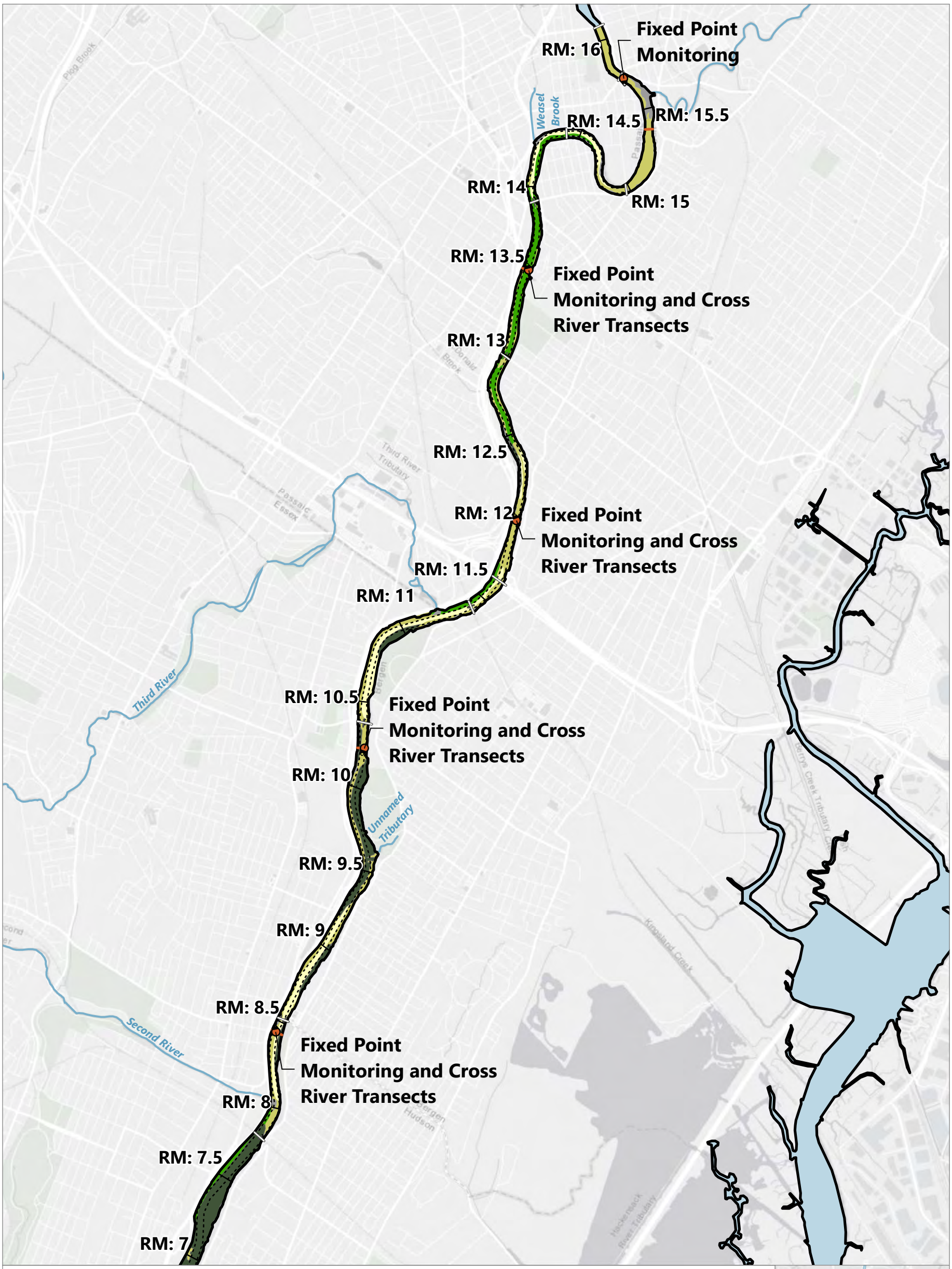
Troy Gallagher – CDM Smith
Alexandra Allen – OSI
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM

All personnel met at the 1 Madison Road boat dock in Rutherford, New Jersey. OSI, AECOM, and CDM Smith all rode in OSI's boat, which was equipped with equipment for sampling. No representation from Anchor QEA was provided on this day of oversight.

OSI's boat mobilized to RM 13.5 to begin preparations for sample collection during the ebb tide. Water quality parameters were recorded from the YSI before and after sample collection. Samples were collected from the bottom of RM 13.5. The tubing and the YSI were raised to the surface location, and samples were collected and placed in coolers.

OSI's boat mobilized to RM 12.0 to begin preparations for sample collection during the ebb tide. Water quality parameters were recorded from the YSI before and after sample collection. Samples were collected from the bottom of RM 12.0. The tubing and the YSI were raised to the surface location, and samples were collected and placed in coolers. All samples were handed off to personnel onshore to prepare for shipment. This concluded the field oversight for the first CWCM event.

Figure 1

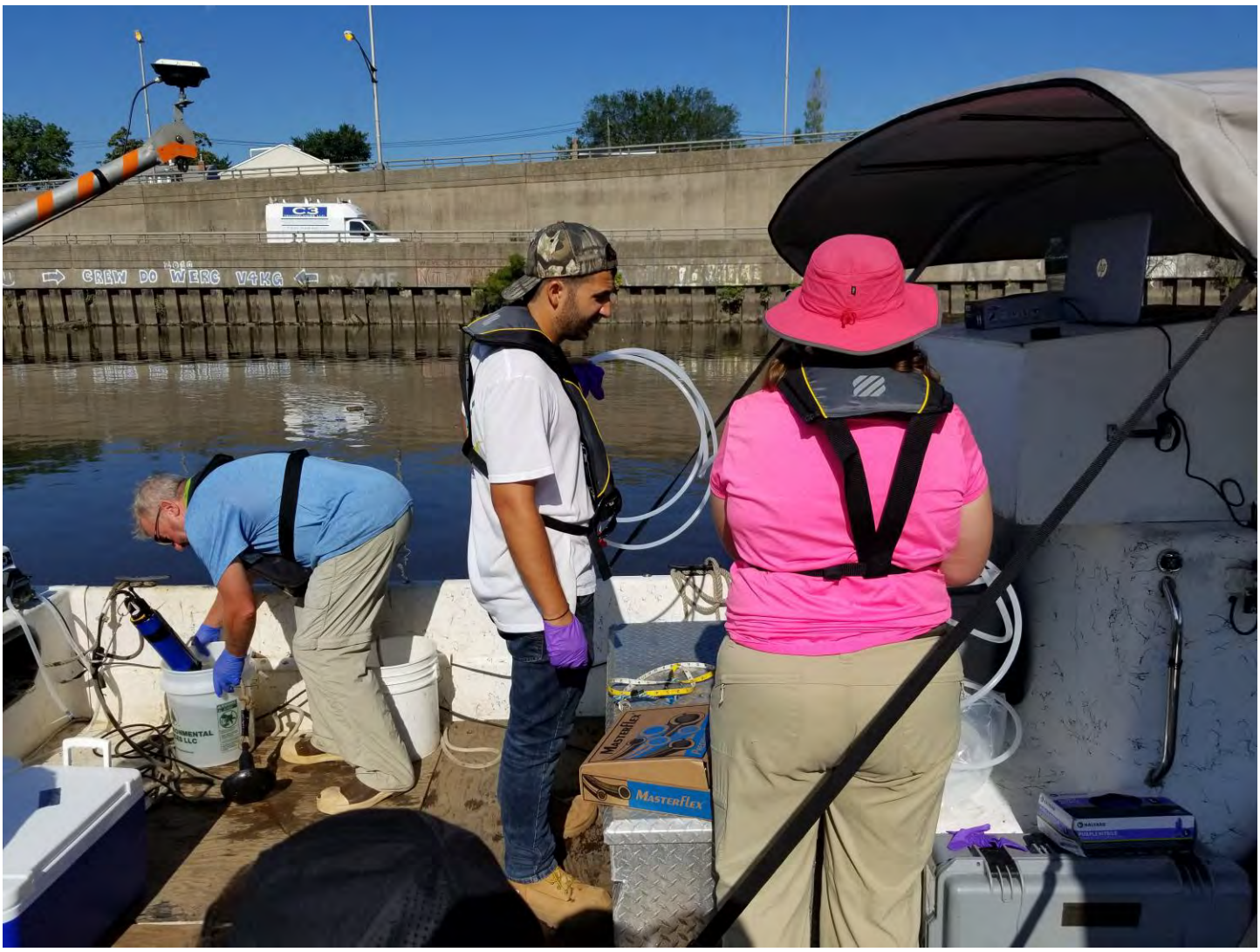


Publish Date: 2019/05/21, 10:59 AM | User: dbaker
Filepath: \\Boston1\jobs\Passaic_CPG\DOCUMENTS\2019\Current_Conditions_Physical_WC_QAPP\source\RM7.8_to_DD_Map_monitoring_locations_FullExtent.mxd

Figure 1
Current Conditions Monitoring Locations
Field Sampling Plan Addendum
Current Conditions Monitoring Program - Physical Water Column Monitoring
Lower Passaic River Restoration Project

Attachment 1

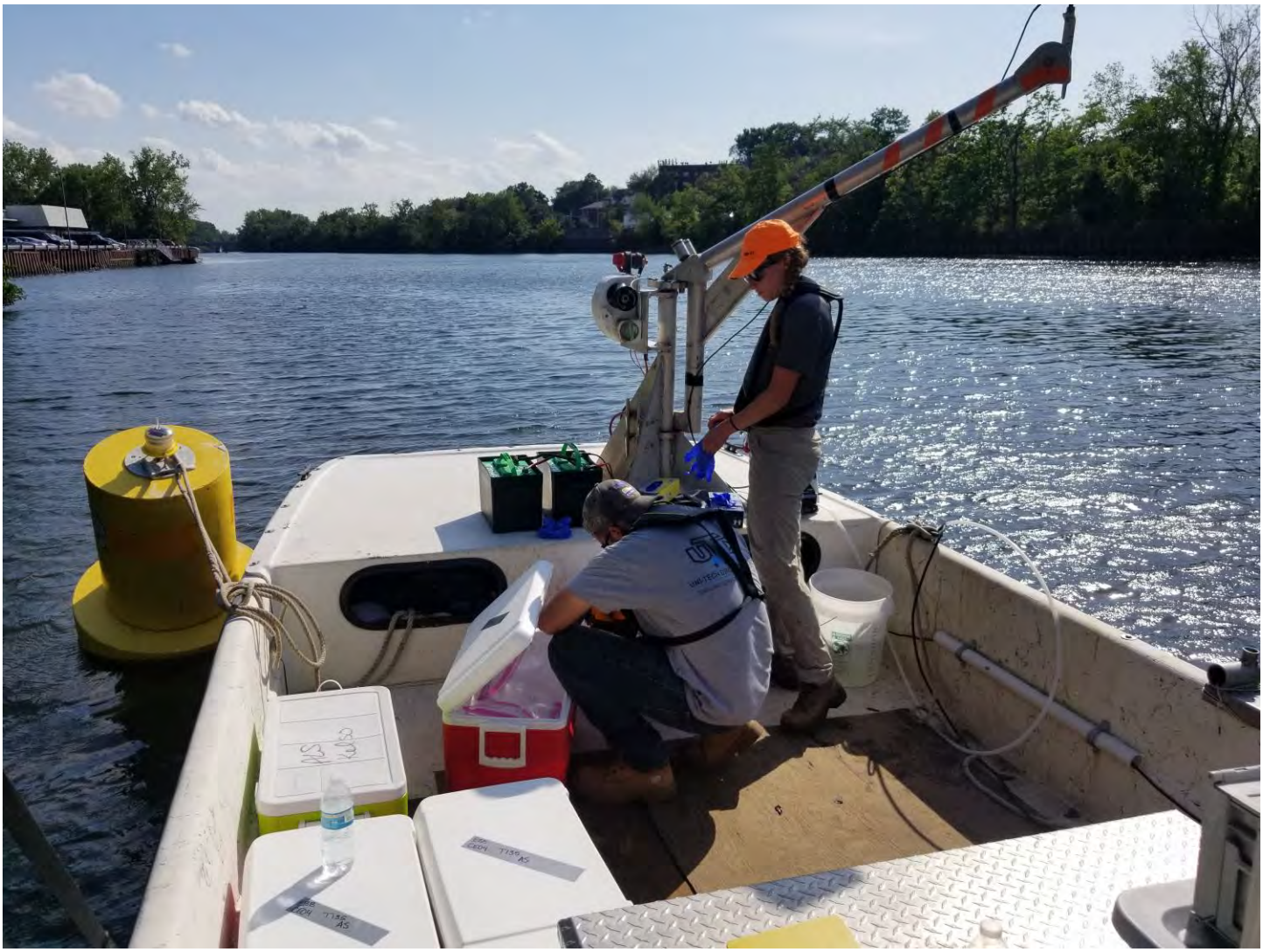
Photographs of Field Activities



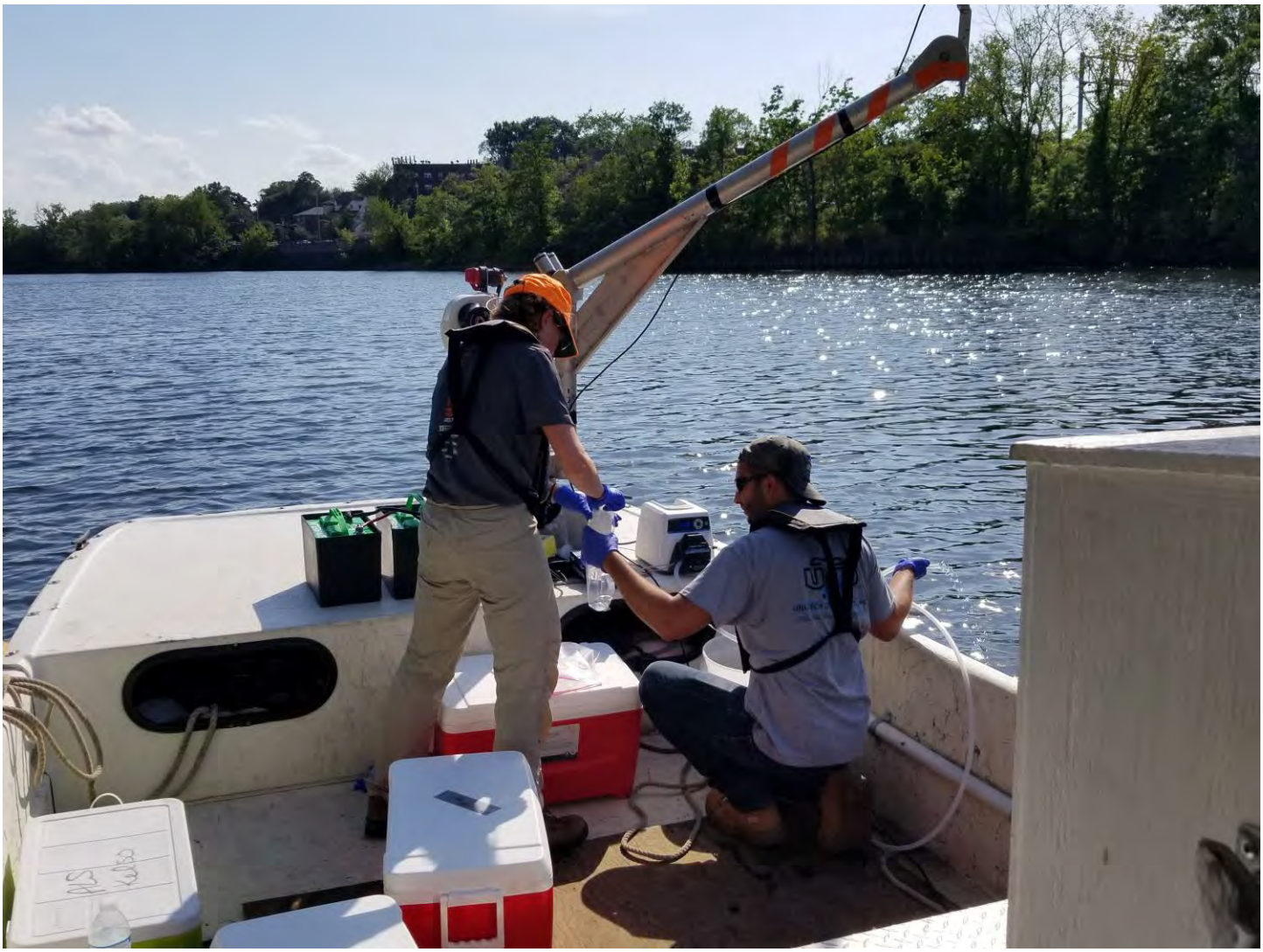
Photograph 1: Preparing tubing for the peristaltic pump, and getting YSI ready for deployment

Photograph 2: Checking the readings on the YSI to ensure accuracy before sampling

Photograph 3: Sample preparation and adjusting tubing at RM 15.8



Photograph 4: Labeling and preparing sample containers for sampling at RM 13.5



Photograph 5: AECOM collection samples from RM 13.5

Photograph 6: AECOM collecting samples from RM 12.0

Photograph 7: AECOM pumping water directly into sample containers at RM 12.0

Photograph 8: AECOM labeling sample containers for collection

Attachment 2

Field Logbook

Location Rutherford NJ Date 8/14/19

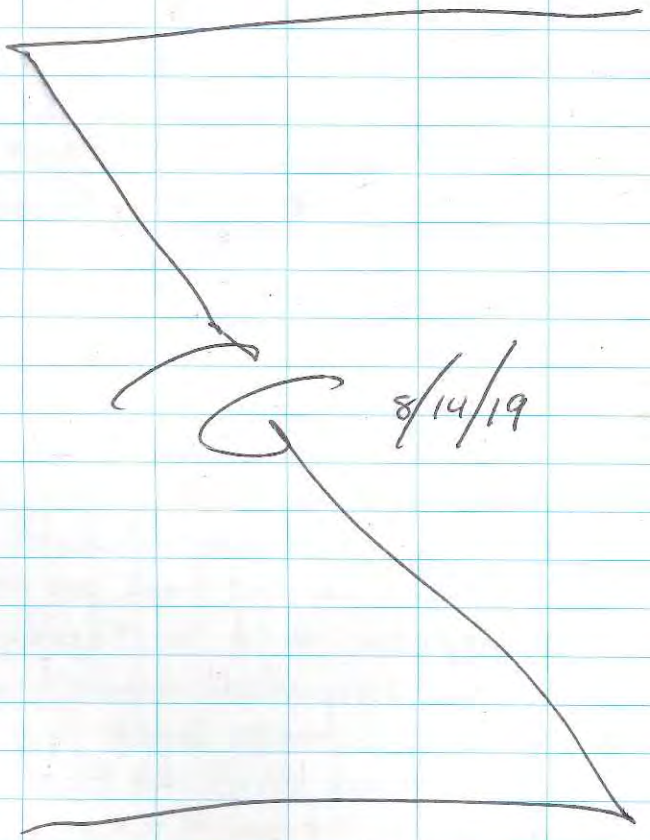
Project / Client Lower Passaic River / USACE

Diamond Alkalai OU4

9[20] Arrive at boat dock and take boat out of water. Drive back to dock at 1 Madison St.

9[50] Arrive at 1 Madison St.

10[00] TG offsite.



Location Rutherford NJ Date 8/20/19

Project / Client Lower Passaic River / USACE

Diamond Alkalai OU4

7[00] TG arrive onsite and meet with Alex Allen (OSI) Chris Yates (Anchor QEA), Kristen Dorocher (AECOM).

Weather: Sunny, 85°F

PPE: Modified level D, PFD

Purpose: CWCM sampling event

7[15] Begin loading up both boats, and getting bottleware ready for event.

7[45] H+S meeting conducted, boat safety, heat warnings. Get in boats and begin heading to RM 8.4 for first sample.

8[20] Arrive @ RM 8.4, awaiting other boat to arrive, then sampling will begin.

8[28] OSI boat arrives at buoy and starts taking YSI measurements. Crew labeling bottleware. TG aboard boat with Chris Yates, anchored away from OSI boat while they sample. No EPA splits will be taken today by CDM Smith. 8/20/19

Location Rutherford NJ Date 8/20/19

Project / Client Lower Passaic River / USACE
Diamond Alkali OU4

8[45] Sample being collected via peristaltic pump at RM 8.4 from bottom. [19D-CE02-T084-~~AS~~ BS]

8[58] Begin taking YSI parameters from surface water. Begin sample collection. [19D-CE02-T084-AS]

9[30] Swap coolers between both boats and begin getting ready to move to RM 10.2.

9[38] Leave RM 8.4 and mobilize to RM 10.2

9[50] Arrive at RM 10.2 and await OSI boat to begin sampling at location. OSI begins taking YSI parameters at location and prepares for sample collection.

10[12] Samples collected from bottom [19D-CE02-T102-BS]. Begin collecting samples from surface.

10[35] Samples collected from surface [19D-CE02-T102-AS]

~~10~~ 10[41] Depart RM 10.2 and head to dock at 1 Madison St.

8/20/19

Location Rutherford NJ Date 8/20/19

Project / Client Lower Passaic River / USACE
Diamond Alkali OU4

11[00] Arrive at dock and load up boats with new coolers and bottleware. Crew breaks for lunch and waits for tides to change for next samples. Will re-group with the crew around 1330 and head to RM 10.2 and 8.4 to collect the ebb stage samples.

13[00] TG arrives back @ 1 Madison dock after lunch and awaits boat departure.

13[30] OSI/AECOM/Anchor/TG re-group on boat dock and prepare to head to RM 10.2.

13[50] Depart dock towards RM 10.2.

14[12] Arrive at RM 10.2 and begin setting up for sampling.

14[36] YSI parameters taken and samples collected from bottom [19D-CE04-T102-BS]

14[57] YSI brought to surface to collect parameters and prepare for sample collection.

8/20/19

Location Rutherford NJ Date 8/20/19
Project / Client Lower Passaic River / USACE
Diamond Alkalai OU4

15[08] Surface sample collected from RM 10.2. 19D-CE04-T102-AS
15[25] Exchange coolers with OSI boat and head over to RM 8.4 for final location of the day
15[35] Arrive at RM 8.4. OSI begins preparations for sampling.
15[50] Collect samples from bottom of RM 8.4 19D-CE04-T084-BS
16[15] Raise YSI to the surface collect parameters, and collect samples from surface 19D-CE04-T084-AS
16[37] Depart from RM 8.4 and head back to 1 Madison St. dock.
17[15] Arrive at dock and unload all equipment and samples
17[30] TG offsite

LG
8/20/19

Location Rutherford NJ Date 8/20/19
Project / Client Lower Passaic River / USACE
Diamond Alkalai OU4

7[30] TG arrives onsite at 1 Madison dock for CWCM event
Weather: 85°F, partly cloudy
PPE: Level D, PFD
Purpose: Oversight of CWCM event
7[45] Load up both boats with coolers and sample bottles, prepare to depart to begin sampling.
8[00] H+S meeting: boat and shore safety, lightning rules for getting off the water.
8[30] Depart dock and head towards RM 12.0
8[47] Arrive at RM 12.0. OSI boat sets up YSI to collect parameters. Gets bottles ready for sampling.
9[05] Collect samples from bottom of RM 12.0 19D-CE02-T120-BS
Raise YSI to the surface and collect parameters.
9[30] Collect samples from surface at RM 12.0 19D-CE02-T120-AS

LG
8/21/19

Location Rutherford NJ Date 8/21/19

Project / Client Lower Passaic River/USACE
Diamond Alkalai 044

940 A duplicate sample was collected from the surface location at RM 12.0 [19D-CE02-T120-AT]

1000 Depart RM 12.0 and mobilize towards RM 13.5. Drop off full coolers at dock before moving to RM 13.5

1015 OSI boat begins taking water parameters from bottom of 13.5

1030 Collected samples from bottom of RM 13.5 [19D-CE02-T135-BS]

1035 Raise YSI and begin preparations for collecting sample from surface at RM 13.5

1050 Collected surface sample from RM 13.5 [19D-CE02-T135-AS]

1115 arrive back on dock and take lunch. To meet back at dock around 13:30.

1330 TG back onsite at dock. Waiting for all crew members to arrive, then will depart.

1420 Depart dock and head towards RM 15.8

8/21/19 TG

Location Rutherford NJ Date 8/21/19

Project / Client Lower Passaic River/USACE
Diamond Alkalai 044

1440 Arrive at RM 15.8, OSI boat begins setting up YSI and sample bottles.

1505 Begin collecting samples from ~~bottom~~ mid-depth of river at RM 15.8 [19D-CE04-T158-~~BS~~ ~~MD~~ -MS]

1530 Head back to dock to get a new car battery for OSI's boat.

1555 Arrive at RM 13.5 and begin preparations for sample collection

1610 Before sampling had begun, a lightning strike and thunder was observed. All boats were driven back to dock and crew heads on-shore. Will wait until 30 min between lightning strikes per HASP.

1650 OSI officially calls day over due to weather. Will finish sampling tomorrow afternoon

1715 TG offsite

6/21/19

9⁴⁰

10⁰⁰

10¹⁵

10³⁰

10³⁵

10⁵⁰

11¹⁵

13³⁰

14²⁰

14⁴⁵ TG arrive at 1 Madison dock and wait for OSI crew to mobilize onto boats.

Weather: 99°F, sunny

PPE: Level D, PFD

Purpose: Complete CWCM event that was cut off by weather yesterday.

15³⁰ H+S meeting conducted dock. Heat safety and boa safety. TG is on board with OSI today, only one boati being taken out. Depart d and head towards RM 13.

15⁵⁵ OSI preparing sample bott and getting ready to take Y parameters. Getting ready t take samples.

16¹⁵ Begin collecting samples from bottom of RM 13.5 [19D-CE04-T135-BS]

16²⁵ Prepare to collect surface samples from RM 13.5

16⁴⁰ Begin sample collection fro surface [19D-CE04-T135-AS]

7⁰⁰ Arrive back at dock to swap coolers, then head to RM 12.0

7¹⁰ Arrive at RM 12.0 and begin setting up for YSI parameters and sample collection

7²⁰ Collect sample from bottom of RM 12.0 [19D-CE04-T120-BS]

7³⁰ Raise tubing and prepare to collect surface sample from RM 12.0

7⁴⁰ Collect sample from surface at RM 12.0 [19D-CE04-T135-AS]

8⁰⁰ Depart RM 12.0 and head back to dock.

8³⁰ TG offsite

8/22/19